

Claims

1. A protocol translation cable assembly comprising:
 - a first connector having a first plurality of pins;
 - 5 a second connector having a second plurality of pins;
 - an electrical cable coupling said first connector to said second connector, said electrical cable including a plurality of conductors; and
 - 10 translation circuitry coupled to at least some of said plurality of wires of said electrical cable at points between ends of said first plurality of pins of said first connector and ends of said second plurality of pins of said second connector, said translation circuitry deriving its power from said electrical cable, said translation circuitry including a first protocol processor communicating with said first connector and a second protocol processor communicating with said second connector, said first protocol processor and said second protocol processor being coupled together for mutual communication, such that said first protocol processor is capable of communicating with a first apparatus via said first connector with said first protocol and such that said second protocol processor is capable of communicating with a second apparatus via said second connector with said second protocol, said first protocol being different from said second protocol.
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 2. A protocol translation cable as recited in claim 1 wherein said first protocol is a first fixed protocol and wherein said second protocol is a second fixed protocol.
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 3. A protocol translation cable as recited in claim 2 wherein said first fixed protocol is a USB protocol, and wherein said second fixed protocol is an Ethernet protocol.
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 4. A protocol translation cable as recited in claim 1 wherein said translation circuitry further includes memory coupled to at least one of said first protocol processor and said second protocol processor.

5. A protocol translation cable as recited in claim 4 wherein said first protocol is implemented with a first driver stored in said memory, and wherein said second protocol is implemented with a second driver stored in said memory.

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6. A protocol translation cable as recited in claim 5 wherein said memory is a read-only memory including a collection of drivers, and wherein said processor determines an appropriate driver for at least one of said first driver and said second driver selected from said collection of drivers.

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7. A protocol translation cable as recited in claim 6 wherein at least one of said first protocol processor and said second protocol processor determines an appropriate driver by an analysis of electrical signals present upon said plurality of pins of at least one of said first connector and said second connector.

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8. A protocol translation cable as recited in claim 5 wherein said memory is a read/write memory including a collection of drivers, and wherein said processor determines an appropriate driver for at least one of said first driver and said second driver selected from said collection of drivers.

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9. A protocol translation cable as recited in claim 8 wherein said at least one of said first protocol processor and said second protocol processor determines an appropriate driver by an analysis of electrical signals present upon said plurality of pins of at least one of said first connector and said second connector.

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10. A protocol translation device as recited in claim 5 wherein said memory is a read/write memory, and wherein at least one of said first driver and said second driver are loaded into said read/write memory through at least one of said first connector and said second connector.

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11. A system comprising:

a first apparatus capable of digitally communicating with a first protocol through a first apparatus connector;

5 a second apparatus capable of digitally communicating with a second protocol through a second apparatus connector; and

a cable assembly connecting said first apparatus to said second apparatus, said cable including:

a first connector having a first plurality of pins;

a second connector having a second plurality of pins;

10 an electrical cable coupling said first connector to said second connector, said electrical cable including a plurality of conductors; and

15 translation circuitry coupled to at least some of said plurality of wires of said electrical cable at points between said first plurality of pins of said first connector and said second plurality of pins of said second connector, said translation circuitry deriving its power from said electrical cable, said translation circuitry including a first protocol processor communicating with said first connector and a second protocol processor communicating with said second connector, said first protocol processor and said second protocol processor being coupled together for mutual communication, such that said first protocol processor is capable of communicating with a first apparatus via said first connector with said first protocol and such that said second protocol processor is capable of communicating with a second apparatus via said second connector with said second protocol, said first protocol being different from said second protocol.

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30 12. A method for plug-and-play compatibility between a first apparatus capable of digitally communicating with a first protocol through a first apparatus connector and a second apparatus capable of digitally communicating with a second protocol through a second apparatus connector, said method comprising:

detecting at a first apparatus connector a first communication protocol;
enabling a first protocol interface in a first protocol processor;
detecting at a second apparatus connector a second communication protocol;
enabling a second protocol interface in a second protocol processor;

5 translating digital communications provided at said first apparatus connector in said first protocol into digital communications at said second apparatus connector in said second protocol through said first protocol translator and then said second protocol translator; and

10 translating digital communications provided at said second apparatus connector in said second protocol into digital communications at said first apparatus connector in said first protocol through said second protocol translator and then said first protocol translator.

15 13. A cable assembly for plug-and-play compatibility between a first apparatus capable of digitally communicating with a first protocol through a first apparatus connector and a second apparatus capable of digitally communicating with a second protocol through a second apparatus connector, said cable assembly comprising:

20 a first cable connector adapted to be coupled to said first apparatus connector;

a second cable connector adapted to be coupled to said second apparatus connector;

25 translating digital communications provided at said first apparatus connector in said first protocol into digital communications at said second apparatus connector in said second protocol; and

translating digital communications provided at said second apparatus connector in said second protocol into digital communications at said first apparatus connector in said first protocol.

30 14. A single chip protocol translator comprising:

a unitary semiconductor substrate integrating translation circuitry including a first protocol processor and a second protocol processor, said first protocol processor and said second protocol processor being coupled together for mutual communication, such that said first protocol processor is capable of communicating with external devices with said first protocol and such that said second protocol processor is capable of communicating with external devices with said second protocol, said first protocol being different from said second protocol.

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